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## **Intense Beam Transport and Space Charge Compensation Strategies**

Oliver Meusel, Martin Droba and Kathrin Schulte

*IAP, Goethe University Frankfurt, Frankfurt, D-60438, Germany*

*Corresponding Author: Oliver Meusel, e-mail address: o.meusel@iap.uni-frankfurt.de*

The transport of intense ion beams is affected by the collective behavior of this kind of multi particle and multi species system. The space charge expressed by the generalized perveance dominates the dynamical processes of thermalisation, which leads to an emittance growth. To prevent changes of intrinsic beam properties and to reduce the intensity dependent focusing forces space charge compensation seems to be an adequate solution.

In a case of positively charged ion beam electrons, produced by residual gas ionization and secondary electrons provide the space charge compensation. The influence of the compensation particles on beam transport and the local degree of space charge compensation is given by different beam properties as well as the ion beam optics.

Especially for highly charged ion beams space charge compensation in combination with poor vacuum conditions leads to recombination processes and therefore increased beam losses. Strategies for providing a compensation electron reservoir at very low residual gas pressures will be discussed.